

REMARKS

Summary of Amendments

1. Claims 1-7 were originally presented in this application. Claims 8-14 were added by preliminary amendment. Claim 1 has been amended, as described in more detail below, to more particularly point out and distinctly claim the subject matter of the present invention. Claim 2 has been amended to correct an inadvertent editorial error. No claims have been added and no claims have been canceled in this paper. Claims 1-14 thus remain pending.

Claim Rejections – 35 U.S.C. § 102

2. Claims 1-14 stand rejected under 35 U.S.C. § 102(e) as being anticipated by *Kuibira et al.* (U.S. Pat. No. 6,508,884). In particular, with respect to independent claim 1, the Examiner states,

Kuibira et al. discloses a wafer holder (susceptor) 1 (Fig. 5) containing at least one heater 11. The cross-sectional shape 11 (Fig. 3) is shown as a rectangular whose lateral and bottom sides [are] perpendicular to each other and having an angle of 90 degrees.

3. Applicants respectfully traverse this rejection to the extent that it is pertinent to independent claim 1, as amended. Claim 1, now recites,

a resistive heating element composed of wiring lines, the wiring lines being substantially trapezoidal in cross-section, the wiring lines further defining bottom and inclined lateral sides.

Applicants respectfully submit that the claim 1 amendments are supported by the original specification and figures, such that no new matter has been added. For example, the amendments are supported by Fig. 1A.

4. Applicant respectfully submits that claim 1, as amended, now distinguishes patentably over *Kuibira et al.* In particular, there is no disclosure of heating element wiring lines having a substantially trapezoidal cross section in *Kuibira et al.* On the contrary, *Kuibira et al.* only discloses rectangularly shaped wiring lines. Accordingly, *Kuibira et al.* cannot anticipate the invention as recited in amended independent claim 1.
5. Moreover, *Kuibira et al.* shows no recognition of the problem faced by Applicants, namely that of preventing susceptor damage caused by shorting between

adjacent wiring lines. The inventors have discovered, as disclosed in the original specification, that forming the wiring lines so that they have a trapezoidal cross section and an apex angle of greater than 5 degrees advantageously prevents shorting (or arcing) between adjacent lines. Thus, for the reasons set forth above, Applicants respectfully urge that the rejection over *Kuibira et al.* of independent claim 1 is overcome.

6. Claims 1, 4, and 6 stand rejected under 35 U.S.C. § 102(a) as being anticipated by *Aonuma et al.* (JP 2002-252269). In particular, with respect to independent claim 1, the Examiner states,

Aonuma et al. discloses a ceramic susceptor (Fig. 2) for processing a wafer, wherein the susceptor includes a heating element 12 (Fig. 2) embedded therein.

Aonuma et al. further discloses that the metal electrode (resistive heating element) may be oval, capsular, or rectangular, and is not limited in its cross-sectional shape (Para 0024). This reference teaches resistive heating elements having various cross-sectional shapes. When the shape is of a similar shape such as rectangular, the angle between the lateral and the bottom side is ninety degrees.

7. Applicants respectfully submit that claim 1, as amended, now distinguishes patentably over *Aonuma et al.* In particular, there is no disclosure of heating element wiring lines having a substantially trapezoidal cross section in *Aonuma et al.* Accordingly, *Aonuma et al.* cannot anticipate the invention as recited in amended independent claim 1. Furthermore, *Aonuma et al.* show no recognition of the problem faced by Applicants. As stated above in paragraph 5, the inventors have discovered that forming the wiring lines so that they have a trapezoidal cross section and an apex angle of greater than 5 degrees advantageously prevents shorting (or arcing) between adjacent lines. Thus, for the reasons set forth above, Applicants respectfully submit that the *Aonuma et al.* based rejection of independent claim 1 is overcome.
8. Claims 1, 4, and 6 stand rejected under 35 U.S.C. § 102(b) as being anticipated by *Hiramatsu et al.* (JP 2001-244320). In particular, with respect to independent claim 1, the Examiner states

Hiramatsu et al. discloses a ceramic susceptor 1 (Fig. 3) for processing a wafer wherein the susceptor includes a heating element 5 (Fig. 3) embedded therein.

Hiramatsu et al. further discloses that a metal electrode (resistive heating element) is made in the shape of cusp (Para 0070). This reference teaches resistive heating elements having a pointed shape which could have any angle.

9. Applicants respectfully submit that claim 1, as amended, now distinguishes patentably over *Hiramatsu et al.* In particular, there is no disclosure of heating element wiring lines having a substantially trapezoidal cross section in *Hiramatsu et al.* On the contrary, *Hiramatsu et al.* only disclose cusp- or oval-shaped wiring lines.
10. Moreover, *Hiramatsu et al.* discloses a highly pointed wiring line that appears to have an apex angle of less than 5 degrees (note the pointed tip on Drawing 14). Thus, not only does *Hiramatsu et al.* fail to disclose trapezoidal wiring lines, but the reference also fails to disclose a wiring line having an apex angle of greater than 5 degrees.
11. Applicants respectfully submit that *Hiramatsu et al.* also strongly teaches away from the present invention as recited in claim 1. *Hiramatsu et al.* is apparently similar to the present invention in that an object of *Hiramatsu et al.* is to reduce (or prevent) damage to the ceramic. However, the approach taken by *Hiramatsu et al.* is essentially opposite that of the present invention. In paragraph (0015) *Hiramatsu et al.* teaches a sharp, pointed (or needlelike) shape (see Drawing 14). *Hiramatsu et al.* even argue that the apex angle should be reduced (sharpened) to reduce spark formation (shorting). This is exactly opposite the teaching of the present invention, which teaches an apex angle of greater than 5 degrees to prevent shorting between adjacent lines. Accordingly, for the reasons set forth above, *Hiramatsu et al.* cannot anticipate or render obvious the present invention as recited in claim 1. Applicants therefore courteously urge that the rejection over *Hiramatsu et al.* of claim 1 is overcome.

Claim Rejections – 35 U.S.C. § 103

12. Claims 2, 3, 5, and 7-14 stand rejected under 35 USC § 103(a) as being unpatentable over at least one of *Kuibira et al.*, *Aonuma et al.*, and *Hiramatsu et al.* Applicants respectfully submit that in view of the remarks set forth above in Paragraphs 2-11, the rejections under § 103 are rendered moot by the present reply.
13. Applicants respectfully submit that independent claim 1 is allowable over the prior art of record. Independent claim 1 being allowable, it follows that dependent claims 2-14 must also be allowable, since these claims carry with them all of the elements of claim 1, to which they ultimately refer.

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Accordingly, Applicants courteously urge that this application is in condition for allowance. Reconsideration and withdrawal of the rejections is requested. Favorable action by the Examiner at an early date is solicited.

Respectfully submitted,

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/James Judge/

James W. Judge
Registration No. 42,701

JUDGE & MURAKAMI IP ASSOCIATES
Dojima Building, 7th Floor
6-8 Nishitemma 2-Chome, Kita-ku
Osaka-shi 530-0047
JAPAN

Telephone: **305-938-7119**
Voicemail/Fax: **703-997-4565**